

A warm finish to winter for most of the country

Temperature	Temperatures were above average (0.51°C to 1.20°C above average) or well above average (>1.20°C above average) for most of the South Island, Wellington, Whanganui, Taranaki, and parts of Waikato, Auckland, and Northland. Temperatures were near average ($\pm 0.50^\circ\text{C}$ of average) for much of Bay of Plenty, southern Waikato, Gisborne, Hawke's Bay, Wairarapa, the Kāpiti Coast, southern Marlborough, and coastal South Otago. Isolated areas of below average (0.51°C to 1.20°C below average) temperatures occurred in inland Bay of Plenty and western Gisborne District.
Rainfall	Rainfall was below normal (50-79% of normal) or well below normal (<50% of normal) in parts of Northland, Waikato, Bay of Plenty, Hawke's Bay, coastal Canterbury south of Christchurch, and northern Otago. Rainfall was above normal (120-149% of normal) or well above normal (>149%) in southern and western Southland, inland Otago, coastal North Canterbury, Marlborough, Nelson, Tasman, Wellington, Wairarapa, Kāpiti Coast, coastal Manawatū-Whanganui, and parts of Auckland.
Soil Moisture	At the end of the month, soil moisture levels were lower than normal in eastern parts of Hawke's Bay to the south of Napier. Soil moisture levels were higher than normal for eastern parts of North Canterbury and Marlborough, and parts of Auckland. Soil moisture levels were typically near normal for most remaining parts of New Zealand.

Click on the link to jump to the information you require:

[Overview](#)

[Temperature](#)

[Rainfall](#)

[August 2021 climate in the six main centres](#)

[Highlights and extreme events](#)

Overview

August 2021 was characterised by higher than normal mean sea level pressure (MSLP) over the North Island and to the north of Aotearoa New Zealand, with lower than normal MSLP to the south of the country. This set up resulted in a northwest airflow anomaly (i.e. more northwesterly winds than normal). The prevailing northwest winds resulted in warmer than usual temperatures for many parts of New Zealand, but especially for the South Island. Overall, the nationwide average temperature in August 2021 was 9.8°C. This was 0.9°C above the 1981-2010 August average, making it New Zealand's 9th-equal warmest August since NIWA's seven station temperature series began in 1909.

Temperatures were well above average (>1.20°C above average) for most of Otago and eastern parts of Canterbury, with above average (0.51°C to 1.20°C above average) temperatures for most remaining parts of the South Island. Temperatures were also above average in parts of Wellington, Whanganui, Taranaki, northeastern Waikato, Auckland, and Northland. Temperatures were near average ($\pm 0.50^\circ\text{C}$ of average) for much of Bay of Plenty, southern Waikato, Gisborne District, inland Hawke's Bay, the Wairarapa, the Kāpiti Coast, southern Marlborough, and coastal South Otago. Below average (0.51°C

to 1.20°C below average) temperatures occurred in isolated parts of inland Bay of Plenty and western Gisborne.

It was a dry finish to winter for parts of Northland, Waikato, Bay of Plenty, Hawke's Bay, coastal Canterbury south of Christchurch, and northern Otago, where rainfall was mostly below normal (50% to 79% of normal). It was a particularly dry month in western Bay of Plenty and coastal North Otago, where well below normal (<50% of normal) rainfall was observed. In contrast, rainfall was above normal (120% to 149% of normal) or well above normal (>149% of normal) in southern and western Southland, inland Otago, coastal North Canterbury, Marlborough, Nelson, Tasman, Wellington, Wairarapa, Kāpiti Coast, coastal Manawatū-Whanganui, and parts of Auckland. Rainfall was typically near normal (80-119% of normal) for remaining parts of New Zealand. Several heavy rainfall events occurred during August, the most notable of which caused severe flooding in western parts of Auckland at the end of the month (see [Highlights and extreme events](#) section for further details).

Further Highlights:

- The highest temperature was 23.0°C, observed at Akaroa and Orari Estate on 24 August.
- The lowest temperature was -9.1°C, observed at Lake Tekapo on 9 August.
- The highest 1-day rainfall was 208 mm, recorded at Kumeū (West Auckland) on 30 August.
- The highest wind gust was 163 km/h, observed at Baring Head on 9 August, and Cape Turnagain on 14 August.
- Of the six main centres in August 2021, Auckland was the warmest, Tauranga was the sunniest and driest, Christchurch was the coldest, Wellington was the wettest and Hamilton was the least sunny.
- Of the available, regularly reporting sunshine observation sites, the sunniest four regions in 2021 so far are Taranaki (1684 hours), Bay of Plenty (1667 hours), Hawke's Bay (1665 hours), and Marlborough (1635 hours).

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Temperature: A mild August for most

It was a mild end to winter for many parts of New Zealand, with eight locations observing near-record high mean temperatures. It was especially warm in parts of Central Otago, where mean temperatures were 1.6-2.0°C higher than average for the time of year. Mean minimum temperatures were well above average for many inland parts of the South Island. Most notable was Roxburgh, where the mean minimum temperature of 4.1°C was 3.3°C above average. Warmer than usual overnight temperatures were commonplace for inland parts of the South Island, resulting in fewer frosts for some locations: for example, Cromwell observed just 10 screen frosts¹, compared to its August average of 17 screen frosts.

¹ A screen frost occurs when the daily minimum air temperature is less than 0°C.

Notably, Waipawa and Whakatu (both located in Hawke’s Bay) observed an enhanced diurnal temperature range (i.e. the difference between daily maximum and minimum temperatures) compared to average. These locations each observed near-record high mean maximum temperatures, and record or near-record low mean minimum temperatures. This temperature pattern is characteristic of two factors: 1) drier than normal soils, and 2) clearer than usual skies. This combination enabled enhanced radiative heating during the day, in addition to enhanced radiative cooling during the night. Both factors were present for much of Hawke’s Bay during August. Firstly, soil moisture levels were lower than usual for central and southern parts of Hawke’s Bay. Secondly, sunshine hours were much higher than normal, e.g. Napier observed 219 hours of sunshine during August (129% of normal; its sunniest August since records began in 1930).

Record² or near-record mean air temperatures for August were recorded at:

Location	Mean air temp. (°C)	Departure from normal (°C)	Year records began	Comments
High records or near-records				
Medbury	7.9	1.5	1927	3rd-highest
Dunedin (Musselburgh)	9.1	1.4	1947	3rd-highest
Lauder	6.7	1.8	1924	3rd-highest
Roxburgh	8.4	2.0	1950	3rd-highest
Leigh	13.8	1.1	1966	4th-highest
Middlemarch	7.2	1.6	2000	4th-highest
Oamaru	8.4	1.3	1967	4th-highest
Cromwell	7.6	2.0	1949	4th-highest
Low records or near-records				
None observed				

Record or near-record mean maximum air temperatures for August were recorded at:

Location	Mean maximum air temp. (°C)	Departure from normal (°C)	Year records began	Comments
High records or near-records				
Dannevirke	14.4	1.9	1951	2nd-highest
Waipawa	15.2	1.9	1945	2nd-highest
Tākaka	15.3	1.2	1978	2nd-highest
Dunedin (Musselburgh)	13.0	1.8	1947	2nd-highest
Taupō	13.6	1.8	1949	3rd-highest
Leigh	17.0	1.7	1966	4th-highest
Whakatu	16.2	2.0	1965	4th-highest
Clyde	13.4	1.8	1978	4th-highest
Low records or near-records				
None observed				

² The rankings (1st, 2nd, 3rd.etc) in all Tables in this summary are relative to climate data from a *group* of nearby stations, some of which may no longer be operating. The current climate value is compared against all values from any member of the group, without any regard for homogeneity between one station’s record, and another. This approach is used due to the practical limitations of performing homogeneity checks in real-time.

Record or near-record mean minimum air temperatures for August were recorded at:

Location	Mean minimum air temp. (°C)	Departure from normal (°C)	Year records began	Comments
High records or near-records				
Medbury	3.4	2.7	1927	Highest
Middlemarch	1.2	1.3	2000	2nd-highest
Roxburgh	4.1	3.3	1950	2nd-highest
Culverden	3.5	2.8	1928	3rd-highest
Cheviot	3.5	1.9	1982	3rd-highest
Five Rivers	2.5	1.7	1982	3rd-highest
Cromwell	2.2	2.4	1949	3rd-highest
Lauder	1.7	2.1	1924	3rd-highest
Waipara West	5.0	1.6	1973	4th-highest
Tara Hills	0.5	1.4	1949	4th-highest
Te Anau	3.4	2.5	1963	4th-highest
Low records or near-records				
Waipawa	1.7	-2.1	1945	Lowest
Whakatu	2.1	-1.3	1965	2nd-lowest
Takapau Plains	2.6	-0.8	1962	4th-lowest

Rainfall: A dry month for some, but wet for much of the South Island

Rainfall anomalies (i.e. rainfall measured as a difference from normal) were varied throughout the country. New Zealand's most anomalously dry locations for the month were Tauranga and Windsor (North Otago), where rainfall totals were just 38% and 39% of normal, respectively. In contrast, it was wet month for much of the South Island, and southwestern parts of the North Island. Three locations observed record or near-record high rainfall totals for the month. It was an especially wet August in Nelson, where 181 mm of rain (221% of normal) was recorded, although this wasn't a record or near-record August rainfall total for the city.

Record or near-record August rainfall totals were recorded at:

Location	Rainfall total (mm)	Percentage of normal	Year records began	Comments
High records or near-records				
South West Cape	247	229	1991	Highest
Tākaka	329	180	1976	4th-highest
Arapito	281	150	1978	4th-highest
Low records or near-records				
Te Puke	68	43	1973	3rd-lowest
Windsor	12	39	2000	3rd-lowest

August climate in the six main centres

August temperatures were well above average for Dunedin, with the city observing its third-warmest August on record (records began 1947). Temperatures were above average in Christchurch and Auckland, and near average for remaining main centres. It was a particularly dry month in Tauranga, with just 38% of normal August rainfall. Of the six main centres in August 2021, Auckland was the warmest, Tauranga was the sunniest and driest, Christchurch was the coldest, Wellington was the wettest and Hamilton was the least sunny.

August 2021 main centre climate statistics:

Temperature			
Location	Mean temp. (°C)	Departure from normal (°C)	Comments
Auckland ^a	12.3	+0.7	Above average
Tauranga ^b	11.3	+0.5	Near average
Hamilton ^c	9.8	+0.2	Near average
Wellington ^d	9.9	+0.5	Near average
Christchurch ^e	8.1	+0.9	Above average
Dunedin ^f	9.1	+1.4	3rd-warmest August on record
Rainfall			
Location	Rainfall (mm)	% of normal	Comments
Auckland ^a	104	92	Near normal
Tauranga ^b	42	38	Well below normal
Hamilton ^c	143	120	Above normal
Wellington ^d	148	127	Above normal
Christchurch ^e	80	128	Above normal
Dunedin ^f	44	79	Below normal
Sunshine			
Location	Sunshine (hours)		
Auckland ^a	160		
Tauranga ^b	161		
Hamilton ^e	122		
Wellington ^d	129		
Christchurch ^e	157		
Dunedin ^f	144		

^a Māngere ^b Tauranga Airport ^c Hamilton Airport ^d Kelburn ^e Christchurch Airport ^f Musselburgh ^g Ruakura

Highlights and extreme events

Temperatures

On 24 August, a warm northwesterly airflow delivered relatively high temperatures for many parts of New Zealand. Both Akaroa and Orari Estate observed a maximum temperature of 23.0°C (the highest temperature recorded in New Zealand during August 2021), with record or near-record high August temperatures observed in several locations across Southland, Otago and Canterbury.

The lowest August temperature was -9.1°C, observed at Lake Tekapo on 9 August.

Record or near-record daily maximum air temperatures for August were recorded at:

Location	Extreme maximum (°C)	Date of extreme temperature	Year records began	Comments
High records or near-records				
Taumarunui	21.7	13th	1947	Highest
Middlemarch	21.5	24th	2000	Highest
Akaroa	23.0	24th	1978	Equal highest
Rotorua	18.4	28th	1964	2nd-highest
Ranfurlly	19.2	24th	1897	2nd-highest
Lumsden	18.1	24th	1982	2nd-highest
Te Kuiti	19.9	28th	1959	Equal 2nd-highest
Tūrangi	17.5	28th	1968	Equal 2nd-highest
Oamaru	22.1	24th	1967	Equal 2nd-highest
Whitianga	20.3	29th	1962	3rd-highest
Orari Estate	23.0	24th	1972	3rd-highest
Windsor	21.3	24th	2000	3rd-highest
Manapouri (West Arm Jetty)	14.2	24th	1971	3rd-highest
Low records or near-records				
Westport	8.4	8th	1966	Equal lowest
Porirua	7.8	9th	1972	Equal 2nd-lowest
Waiouru	0.5	9th	1972	Equal 2nd-lowest
Tiwai Point	5.7	8th	1972	Equal 3rd-lowest
Motueka	7.5	8th	1972	4th-lowest

Record or near-record daily minimum air temperatures for August were recorded at:

Location	Extreme minimum (°C)	Date of extreme temperature	Year records began	Comments
High records or near-records				
Motueka	11.3	28th	1972	Highest
Windsor	12.6	25th	2000	Highest
Middlemarch	13.6	25th	2000	Highest
Dunedin (Airport)	13.8	25th	1972	Highest
Manapouri (West Arm Jetty)	9.2	25th	1972	Highest
Cromwell	12.2	25th	1949	Highest
Tiwai Point	10.3	25th	1972	Highest

South West Cape	11.9	24th	1991	Highest
Westport	12.3	28th	1966	Equal highest
Cheviot	11.8	25th	1982	Equal highest
Wānaka	10.5	24th	1972	2nd-highest
Oamaru	12.6	25th	1972	2nd-highest
Five Rivers	12.5	25th	1982	2nd-highest
Secretary Island	12.3	24th	1988	3rd-highest
Waipara West	14.3	24th	1973	3rd-highest
Te Anau	9.5	25th	1973	3rd-highest
Lumsden	12.0	25th	1982	3rd-highest
Roxburgh	12.1	25th	1950	3rd-highest
Arapito	12.3	28th	1978	Equal 3rd-highest
Reefton	10.3	28th	1972	Equal 3rd-highest
Hokitika	11.8	24th	1866	4th-highest
Milford Sound	11.1	25th	1935	4th-highest
Le Bons Bay	11.7	24th	1984	4th-highest
Manapouri (Airport)	9.4	25th	1973	4th-highest
Kaikōura	11.5	25th	1972	Equal 4th-highest
Low records or near-records				
New Plymouth	-1.7	10th	1944	2nd-lowest
Hicks Bay	1.3	10th	1969	Equal 2nd-lowest
Te Kuiti	-2.7	10th	1959	Equal 3rd-lowest

Rain and slips

On 8 August, heavy rainfall brought flooding to Takarau Gorge Road in Ōhariu, Wellington. There were also reports of flooding in the suburbs of Newtown, Churton Park, Island Bay, Hataitai, and Wadestown.

On 17 August, multiple incidents of flooding were reported in Horowhenua. There were delays on SH1 in Levin and Manakau as water covered the road, while flooding was reported at properties in Waitārere Beach. Flooding and debris also affected the Capital Connection train service, as two carriages derailed, cancelling the service for the day.

On 27 August, heavy rainfall occurred in Nelson and Tasman. Surface flooding was reported on SH6 between Hira and Rai Valley.

From 30-31 August, near-record rainfall occurred in parts of Auckland. The rainfall was associated with a stalled low pressure system that, in conjunction with a strong ridge of high pressure near the South Island, contributed to an enhanced thermal gradient over the Auckland region. Along this gradient, a concentrated area of unusually strong winds formed about 1,500 m above the earth surface (low level jet), rapidly transporting moisture toward Auckland from the Pacific Ocean. This slow-moving weather feature enabled sustained heavy rainfall and thunderstorm activity to recur over northwestern Auckland for over 12 hours. Considerable flooding was reported in some areas including Kumeū, Helensville, Henderson Valley and Rānui, with an evacuation centre set up for the approximately 60 households forced to leave their home. Approximately 400 homes were without power, with slips and downed trees causing issues for the electricity infrastructure. At least 11 roads were closed due to flooding and slips. Kumeū (West Auckland) received 201 mm of rain during a 14-hour period from 30-31 August. The daily total of 208 mm represents 149% of the normal August monthly rainfall total at Kumeū. This total was New Zealand's highest daily rainfall total for August 2021. In addition, it was the

highest daily rainfall total recorded in the Auckland region since 7 March 2017, when 210 mm was recorded at Waiheke Island.

Record or near-record August extreme 1-day rainfall totals were recorded at:

Location	Extreme 1-day rainfall (mm)	Date of extreme rainfall	Year records began	Comments
Kumeū	208	30th	1943	Highest
South West Cape	67	25th	1991	Highest
Whangaparāoa	89	30th	1946	2nd-highest
Auckland (Albany)	89	30th	1966	2nd-highest
Whangārei	111	31st	1943	3rd-highest
Levin	49	17th	1949	3rd-highest
Tākaka	87	26th	1976	4th-highest
Arapito	53	16th	1978	4th-highest

Wind

On 3 August, strong winds battered parts of Auckland, toppling over trees, powerlines, as well as shipping containers at *Ports of Auckland*. Approximately 4,500 customers were temporarily without power, while *Fire and Emergency New Zealand* were called to 128 weather-related incidents. Farther south, approximately 2,000 homes in Waikato and the Coromandel Peninsula were without power due to downed power lines.

On 8-9 August, strong winds in the Wellington Region led to the closure of the Remutaka Hill Road, while Cook Strait ferries were cancelled.

The highest wind gust was 163 km/h, observed at both Baring Head on 9 August and Cape Turnagain on 14 August.

Record or near-record August extreme wind gusts were recorded at:

Location	Extreme wind gust (km/h)	Date of extreme gust	Year records began	Comments
Pukekohe	83	3rd	1986	Highest
Dannevirke	96	17th	1961	Highest
Upper Hutt (Trentham)	89	16th	1999	Highest
Reefton	61	16th	1999	Highest
Brothers Island	148	9th	1997	Highest
Kaikohe	89	3rd	1986	Equal highest
Mahia	115	9th	1991	Equal highest
Hāwera	95	9th	1986	Equal highest
Auckland (Western Springs)	80	3rd	1994	2nd-highest
New Plymouth	115	9th	1972	2nd-highest
Baring Head	163	9th	1991	2nd-highest
Tūrangi	91	9th	1973	Equal 2nd-highest
Mt Kaukau (Wellington)	159	9th	1969	Equal 2nd-highest
Mokohinau	119	7th	1994	3rd-highest
Mt Ruapehu Chateau	106	9th	2000	3rd-highest
Palmerston North	82	8th	1991	3rd-highest

Secretary Island	120	16th	1994	3rd-highest
Lincoln	82	3rd	1999	3rd-highest
Clyde	76	12th	1983	3rd-highest
Dargaville	96	3rd	1997	Equal 3rd-highest
Auckland (Whenuapai)	100	3rd	1972	Equal 3rd-highest
Tauranga	93	7th	1973	Equal 3rd-highest
Te Puke	56	7th	1987	Equal 3rd-highest
Auckland (Airport)	107	3rd	1971	Equal 3rd-highest
Hamilton (Ruakura)	72	17th	1996	4th-highest
Cape Campbell	115	8th	1963	4th-highest
Motu	93	17th	1991	Equal 4th-highest
Puysegur Point	143	12th	1986	Equal 4th-highest
Bromley	82	14th	1972	Equal 4th-highest
Wānaka	74	12th	1992	Equal 4th-highest
Middlemarch	96	24th	2000	Equal 4th-highest

Lightning, hail, and tornadoes

On the night of 5-6 August, lightning strikes affected the Nelson and Tasman regions as thunderstorms moved through the area. A house was struck by lightning in Britannia Heights, Nelson, as was one in Tākaka. A number of suburbs in Tasman lost power for about an hour after lightning struck the Stoke substation, affecting about 6,500 homes.

On the afternoon of 16 August, thunder and lightning occurred over Queenstown. The electrical storm forced the early closure of local ski areas due to unsafe operating conditions.

On 29 August, a funnel cloud was observed just southwest of Hastings in Hawke's Bay.

During the evening hours of 30 August, approximately 600 lightning strikes were recorded over Auckland. Large hailstones were reported in some western suburbs.

Snow and ice

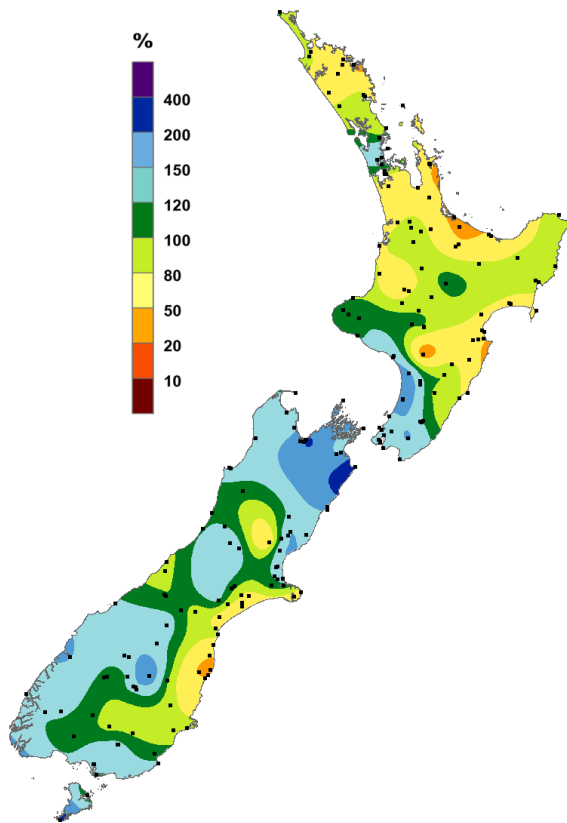
On 8-9 August, cold air moving in behind a front brought low-elevation snowfall to much of the South Island and a few areas in the North Island. Hundreds of motorists were stranded along SH1 at Hundalee on their way south from Kaikōura, while snow closed Lewis and Porters Passes. SH8 was also closed between Fairlie and Lake Pukaki, while in the North Island, Desert Road was closed for a time, as were Napier-Taupō Road and SH1 between Waiouru and Taihape.

Several ski fields were closed on 8 August due to heavy snow leaving roads impassable, including: Mt Hutt, Porters Alpine Resort, Mt Dobson and Roundhill in the South Island, and Tūroa at Mount Ruapehu on the North Island.

From 16-17 August, a front passing over the South Island delivered heavy snowfalls to most alpine areas of New Zealand. This resulted in the closure of the Crown Range Road between Queenstown and Wānaka, SH94 between Hollyford Road Junction and Chasm, while chains were required on SH73 between Springfield and Arthur's Pass. Up to 1 metre of fresh snowfall was reported at Ōhau ski area, 40-50 cm was reported at ski areas in the northern Craigieburn Range, and 25-40 cm was reported for Queenstown and Wānaka ski areas. The fresh snow remained untouched at many ski areas, due to a community outbreak of Covid-19 forcing a nationwide Level 4 lockdown from 11:59 p.m. on 17 August.

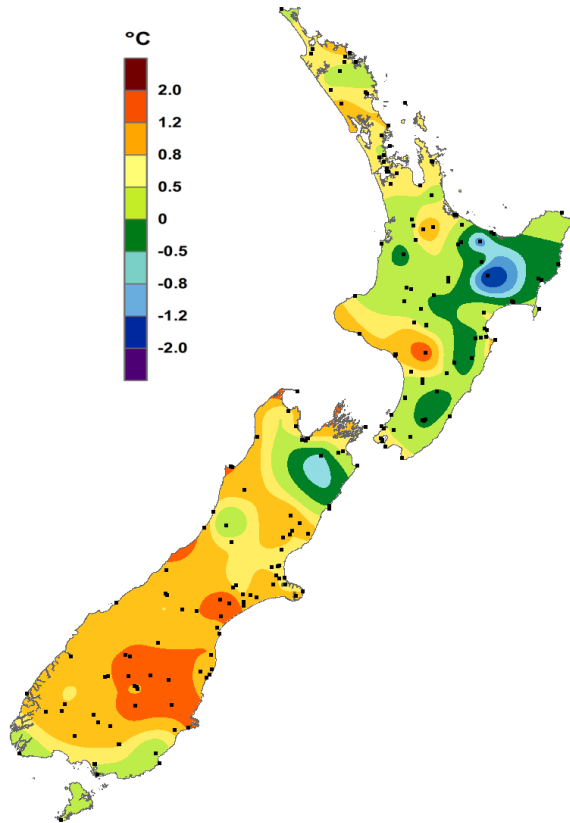
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August rainfall

Expressed as a percentage of the 1981-2010 normal.



August temperature

Expressed as a departure from the 1981-2010 average in degrees Celsius.

<https://www.niwa.co.nz/our-science/climate>

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